Part 1 General

1.1 PERFORMANCE REQUIREMENTS

.1 RCMP Indoor Firing Range Design Guidelines (current edition)

1.2 SUBMITTALS

.1 Product Data: Manufacturer's data sheets including preparation instructions and recommendations, storage and handling requirements and recommendations, and installation methods.

.2 Shop Drawings: Submit shop drawings prepared by the manufacturer showing plans, sections, elevations, layouts, profiles, and product component locations including anchorage, bracing, fasteners, accessories, and finishes.

.3 Manufacturer's Certificates: Certify products meet or exceed specified requirements.

.4 Closeout Submittals: Provide manufacturer's maintenance and operation instructions that include recommendations for periodic checking and adjustment of systems and maintenance of all components.

1.3 QUALITY ASSURANCE – MANUFACTURER/INSTALLER QUALIFICATIONS

.1 Manufacturer Qualifications: Manufacturer shall have a minimum of five (5) years manufacturing specified equipment and provide a list of minimum five (5) clients with similar equipment as specified below.

.2 Manufacturer must provide a toll free telephone number and access to a customer service representative. Services shall be promptly performed by a factory authorized and certified technician.

.3 Installation by manufacturer with installation supervisor having minimum five (5) years of experience installing specified equipment.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Store products in manufacturer's unopened packaging until ready for installation, protected from exposure to rain, snow, or other harmful weather conditions.

1.5 PROJECT CONDITIONS

.1 Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer. Do not install products under environmental conditions outside manufacturer's absolute limits.

Part 2 Products

2.1 ACCEPTABLE MANUFACTURERS

.1 Action Target

.2 Range Systems

.3 Savage Range Systems

.4 Meggitt Training Systems

.5 Patriot Range Technologies

.6 Super Trap

2.2 GRANULAR RUBBER BULLET TRAP

.1 Berm Trap

.1 Bullet Trap of shredded rubber medium, chipped or formed; able to decelerate, capture, and contain projectiles fired from police issued sidearms, pistol calibre carbines, and shotguns without generating bullet or fragment backsplash towards the Firing Line.

.2 Rubber medium treated with fire retardant and free of metal or fibre fragments.

.3 Berm framework made of steel, treated for corrosion resistance.

.4 No rear access for cleaning or service.

.5 Rigidly support the rubber medium, without sagging.

.6 Rubber medium shall exceed 914.4 mm (3 feet) in depth as measured from horizontal angle.

.7 Shall provide protection for end of the range and have a minimum height of 2438.4 mm (8 feet) and span entire width of end of range, unless otherwise noted on range specific drawings.

.8 Shall be inclusive of all hardware necessary for complete assembly.

.9 Shall be mounted on concrete pad or suitable footings.

.10 Shall accommodate surface variations of up to 50.8 mm (2 inches) on a concrete pad or footings.

.11 Shall aid in the elimination of airborne lead on the shooting range.

.12 No water-absorbing material added to rubber medium.

.13 Any hopper/feeder mechanism, needed to maintain consistent rubber thickness, must fit in space available without interfering with any mechanical or electrical systems in that same space.

.14 Shall allow the use of oblique angles for shooing, being able to safely accept +/- 1 lane of cross range fire from the 25 m (82 feet) firing point.

.2 Construction

.1 Berm framework shall snap together with interlocking parts, the top plate secured to the framework with a minimum grade 5 nuts and bolts.

.2 No on-site cutting or welding of materials to assemble the trap.

.3 Berm trap shall include minimum 0.057 cu.m. (2 cu.ft.) of rubber medium for each 0.093 sq.m. (1 sq.ft.) of trap plate.

.3 Operation

.1 The bullet trap shall be capable of full-time service, with downtime for major cleaning and reprofiling of rubber media only. For purposes of maintenance cost

calculations, trap shall be considered in need of cleaning at 60,000 projectiles captured/contained per lane.

.2 The bullet trap shall be designed to accept fire from a fixed 25 m (82 feet) distant Firing Line, in the prone position, and it have a ballistic rating that at a minimum will capture/contain the following fired projectiles:

.1 9 mm Parabellum calibre 147 Grain FMJ and JHP fired from a police carbine or police duty pistol

.2 .40 S&W calibre 165 Grain FMJ fired from a police duty pistol

.3 12 Gauge slug or SSG fired from a police shotgun

.3 The bullet trap shall allow for the recovery of spent rounds for periodic recycling.

.4 The bullet trap shall require no covering over the rubber media to control slumpage.

.4 Options

.1 The top plate shall be 9.525 mm (3/8 inch) AR-500 steel.

.2 Berm trap cleaning.

Part 3 Execution

3.1 EXAMINATION

.1 Do not begin installation until installing surfaces have been properly prepared.

3.2 PREPARATION

.1 Clean surfaces thoroughly prior to installation.

.2 Prepare surfaces using methods recommended by manufacturer for achieving the best result for substrate under project conditions.

3.3 INSTALLATION

.1 Install in accordance with manufacturer’s instructions.

3.4 PROTECTION

.1 Protect installed products until completion of project

.2 Touch-up, repair, or replace damaged products before Substantial Completion.

END OF SECTION

Part 1 General

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.3 Manufacturer's Certificates: Certify products meet or exceed specified requirements.

.4 Mill Certificates: for steel specified in this Section.

.5 Closeout Submittals: Provide manufacturer's maintenance and operation instructions that include recommendations for periodic checking and adjustment of systems and maintenance of all components.

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1.4 DELIVERY, STORAGE, AND HANDLING

.1 Store products in manufacturer's unopened packaging until ready for installation, protected from exposure to rain, snow, or other harmful weather conditions.

1.5 PROJECT CONDITIONS

.1 Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer. Do not install products under environmental conditions outside manufacturer's absolute limits.

Part 2 Products

2.1 BAFFLES/DEFLECTORS/BALLISTIC CEILING

.1 Ceiling Baffles/Deflectors, Ballistic Ceiling

.1 Baffles shall be for the purpose of containing or deflecting downrange misdirected pistol or shotgun projectiles fired from any/all shooting stances (prone, sitting, kneeling, standing) taken at the 25 m (82 feet) Firing Line.

.2 Baffles shall be mounted across the width of the range or as otherwise needed to shelter ceiling features, including pipes, ducts, and lights, from all projectiles fired from all shooting stances (prone, sitting, kneeling, standing) taken at the 25 m (82 feet) Firing Line.

.3 Ceiling baffles/deflectors and ballistic ceiling shall consist solely of plate steel clad in 19 mm (3/4 inch) FRT plywood and acoustic material. The fabrication of these panels shall not include any welded components or field cut-outs (holes, notches, grooves, etc.).

.4 Fired projectiles striking the baffles or deflectors shall not generate backsplash towards the shooters. All projectile fragments shall be contained or shall be redirected towards the bullet trap.

.5 Baffles and ballistic ceiling shall interconnect one to another in a modular fashion so that they may be taken apart again, replaced, or moved.

.6 In addition to being stackable horizontally, rows of baffles may also be connected vertically to provide protection of an area larger than can be sheltered by standard sized plates. All standard baffle interconnection kits shall contain the means to stack in both the horizontal and vertical direction without the addition of further components. As with horizontal stacking, vertical stacking will also guarantee overlap in the joints to provide a resulting single, contiguous, surface. There shall be no horizontal joints in baffles. Vertically overlapping steel plates shall have a minimum of 50 mm (2 inches) Line of Sight overlap.

.2 Construction

.1 All exposed fasteners flush mounted with countersunk heads or ground to standard specified. All exposed steel edges bevelled at 42 degrees to a fillet of approximately 1.6 mm (1/16 inch).

.2 All joints shall provide overlapping surfaces so there is no potential for small cracks where projectiles of projectile fragments might impact and ricochet.

.3 When installed in hanging applications, baffles shall be suspended at 1219.2 mm (48 inch) intervals along each joint by steel cable or chain, baffles inclined no more than 30 degrees from horizontal. Each connection point shall contain an integral adjustment device so that the exact height of each joint may be fine-tuned. Each adjustment point shall provide for both fine adjustment (+/- 38.1 mm (+/- 1.5 inch)) and coarse adjustment (+304.8 mm (+12 inch) / -unlimited) without the need to replace or resize the cable.

.4 Baffles and ballistic ceiling shall be free from buckle or wave after assembly.

.5 Deflectors will be provided to cover any gaps or transitions between baffles and other hard surfaces forward of the Firing Line. Deflectors shall have a maximum 42 degree angle from line of fire and be fabricated from, at a minimum, 6 mm (1/4 inch) AR500 plate steel (500 BHN).

.6 Ceiling baffles and ballistic ceiling shall be fabricated from a minimum of 6 mm (1/4 inch) steel plate with a nominal AR500 plate steel (500 BHN), or higher, and be suitable to deflect without the plate being perforated, deformed, or cratered for the following fired projectiles:

.1 9 mm Parabellum calibre 147 Grain FMJ and JHP fired from a police carbine or police duty pistol

.2 .40 S&W calibre 165 Grain FMJ fired from a police duty pistol

.3 12 Gauge slug or SSG fired from a police shotgun

.7 Ceiling baffles and ballistic ceiling over the Firing Line shall be clad with 19 mm (3/4 inch) FRT plywood stood off by wooden spacers from the steel plate by a 25 mm (1 inch) air gap, acoustic coverings affixed to the FRT plywood.

.8 Steel panels must be sandblasted and be in compliance with painting specification SP-6.

Part 3 Execution

3.1 EXAMINATION

.1 Do not begin installation until installing surfaces have been properly prepared.

3.2 PREPARATION

.1 Clean surfaces thoroughly prior to installation.

.2 Prepare surfaces using methods recommended by manufacturer for achieving the best result for substrate under project conditions.

3.3 INSTALLATION

.1 Install in accordance with manufacturer’s instructions.

3.4 PROTECTION

.1 Protect installed products until completion of project

.2 Touch-up, repair, or replace damaged products before Substantial Completion.

END OF SECTION

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Part 2 Products

2.1 ACCEPTABLE MANUFACTURERS

.1 Mancom

.2 Range Systems

.3 Meggitt Training Systems

2.2 SHOOTING STALL

.1 Stall

.1 Shooting stalls are intended to control noise, confine the angles at which shooters can fire downrange, and to provide lane-to-lane ballistic protection for the shooters.

.2 Design shall enhance the laminar flow. Ancillary features or equipment shall not interfere with airflow such that eddies would form causing disruption of the laminar flow.

.3 Height a minimum of 2000 mm (78-3/4 inches), measured at the highest point.

.4 Width determined by project's design and requirements outlined in RCMP Indoor Firing Range Design Guidelines.

.5 Shooting stalls are to be placed at equivalent intervals along the Firing Line.

.6 Shall allow for above ceiling mounted target carriers.

.7 Target controls shall be integrated into stall and able to be mounted on either the right or left support frame.

.8 All wiring concealed within frame.

.9 Provide manufacturer's standard finish, colour as selected by Departmental Representative.

.10 Shooting stalls are to be equipped with a moveable barricade that permits shooters from firing from either the right hand or left hand side of the barricade.

.2 Stall Wall - Transparent

.1 Shooting stall walls to be of a design where 80% of the wall surface is made of transparent ballistic polycarbonate or similar material, providing protection from the pistol/shotgun calibres specified.

.2 Panel easily replaced using standard hand tools.

Part 3 Execution

3.1 EXAMINATION

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3.2 PREPARATION

.1 Clean surfaces thoroughly prior to installation, using methods recommended by manufacturer for achieving best result under project conditions.

3.3 INSTALLATION

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Part 2 Products

2.1 ACCEPTABLE MANUFACTURERS/PRODUCTS

.1 Mancom Freedom AWD Target System

.2 Meggitt XWT Wireless Target Carrier

2.2 WIRELESS TARGET SYSTEM

.1 Track Assembly

.1 11 gauge (minimum) steel, satin-coated finish.

.2 When installed, track sections must be rigid and support the carrier movements along its length without flexing.

.2 Target Retrieval Carrier

.1 Self-propelled by on-board battery

.2 Autosense of battery condition with automatic recharge when necessary

.3 Movement of carrier along its track to be controlled by industrial grade wireless technology and able to position the target carrier at no less than 6 different distances along the track within +/- 5.0 cm of desired distance placement.

.4 Body fabricated of 11 gauge (minimum) steel; faceplate, downrigger and clamp constructed of 6.35 mm (1/4 inch) AR500 hardened steel

.5 Target holding clamp operable by one hand.

.6 Drive wheels: high traction design

.7 Lighting: three (3) user-defined levels of white light and three (3) different strobe patterns of red, white, and blue LEDs; white and strobe patterns changeable from both the local and master control

.8 Target rotation precision controlled with close loop angular feedback

.9 Target carrier able to accommodate user programmable target

.10 Target carrier to be readily dismountable from overhead track for replacement or servicing without having to dismantle track assembly.

.3 Docking Station

.1 Houses battery management system and industrial grade wireless radio link

.2 Low profile, to maximize air flow and minimize air turbulence

.3 Automatically senses battery condition of carrier, having it return “home” to be charged when required

.4 Incorporates lighting effects similar to carrier but with added red light for low light training

.4 Local Control Screen (LCS)

.1 LCS to control target movements for its lane and to be incorporated into the lane’s shooting booth separation barrier.

.2 LCS to be backlit, to be touch sensitive, technology able to accept user inputs, data, and commands.

.3 LCS allows:

.1 Movement of target carrier to any selected position along track to be measured in whole or decimal metres or feet.

.2 Rotation of target to face, edge, or back

.3 Setting of target exposure, pause, and cycle times

.4 Downloading and running of scenarios from the MCS.

.5 User to program target carrier, left and right-hand facing edging functionality with duration exposures user selected.

.6 For backlighting, for use in all lighting environments, allowing for user selectable lighting and user defined lighting patterns and intensities.

.4 Houses intercom and paging required for each lane

.5 Master Control Screen (MCS)

.1 MCS to be positioned in the control room outside of the range with a fully functional slave unit located inside the range.

.2 User to program target carrier, left and right-hand facing edging functionality with duration exposures user selected.

.3 MCS to be backlit, to be touch sensitive, technology able to accept user inputs, data, and commands.

.4 Full descriptors on buttons

.5 Communicates with and controls range target equipment

.6 Powers up within 10 seconds and features a sleep function to power down after a user defined period of inactivity with “waking up” achieved by touching screen

.7 MCS be programmable with no less than 50 individual target control scenarios with no less than 30 programmable target movement/actions per scenario.

.6 Firing Line Photocell Security System

.1 To detect and react to user movements forward of the Firing Line, indicating unsafe shooter movements.

.2 Tied to lighting system, immediately turning up all lights in range when photocell beam is broken.

Part 3 Execution

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END OF SECTION